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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/522,811 | 10/28/2005 | Yasushi Iwata | 040894-7174 | 4726 |
| 9629 7590 03/24/2009 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004 | | | | |
| EXAMINER | | | | |
| YEE, DEBORAH | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1793 | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/522,811

Applicant(s)

IWATA ET AL.

Examiner

Deborah Yee

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 5, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5 and 9 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 19, 2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 62027902 ("JP-902").

4. Claims 1, 3, 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,052,363 ("Stiles").

5. The English abstract of JP-902 discloses ferritic stainless steel subjected to ion-nitrogen implanting to form a titanium nitride film on its surface. Note ferritic stainless steel alloy contains 0.01% carbon as evident by the example set forth in the English abstract and therefore would be within Applicant's claimed ultra-low carbon range of 0.01% or less.

6. The abstract of Stiles discloses a valve stem made from a 300 or 400 series stainless steel alloy whereby its surface is subjected to ion-nitrogen implanting to deposit nitrides to produce a hardness of at least 60R. The 300 or 400 series stainless steel contains carbon up to 0.08% and therefore would include carbon content up to 0.01% as recited by the claims.
7. Even though Stiles or JP-902 does not teach the ion-nitrogen-implanted layer as a seal-function layer, such would not be a patentable consideration since using the layer as a seal function would merely be Applicant's future and intended use.
8. Prior art does not teach reducing hydrogen as recited by claim 5. Hydrogen however would obviously be kept as low as possible because it is considered an impurity.
9. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 03-006363("JP-362") or Japanese patent ("JP-273") for the reasons stated in the previous office actions.

Response to Arguments

10. Applicant's Declaration under 37C.F.R 1.32 filed February 19, 2009 has been fully considered but is not persuasive. Applicant provided two test examples, CS-2 containing 0.007% carbon and CS-L3 containing 0.012% carbon. Tests were conducted to demonstrate that CS-2 exhibited remarkably higher seal functionality compared to CS-L3. The test data, however is not commensurate in scope with the degree or range of protection sought. Applicant establishes criticality for 0.007% carbon base on

example CS-2 but has not provided test data examples containing 0.01% carbon to establish the claimed upper carbon limit of 0.01% as critical.

11. Moreover, it should be noted that newly cited reference, JP-902, teaches an ion-nitrogen implanted stainless steel that can contain 0.01% carbon.

Allowable Subject Matter

12. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. An ultra-low carbon stainless steel which comprises a seal function layer in a surface layer, wherein the seal function layer is formed by an ion implantation method, and the ultra-lower carbon stainless steel contains carbon in amount of 0.006 to 0.008% as recited by claim 8 is not taught or fairly suggested by the art of record.

14. Applicant has discovered that ion-implanted stainless steel containing 0.006 to 0.008% carbon results in a layer having excellent seal functionality with high vacuum tightness and high resilience. Criticality of carbon content is established in 1.132 Declaration.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/
Primary Examiner
Art Unit 1793

/DY/